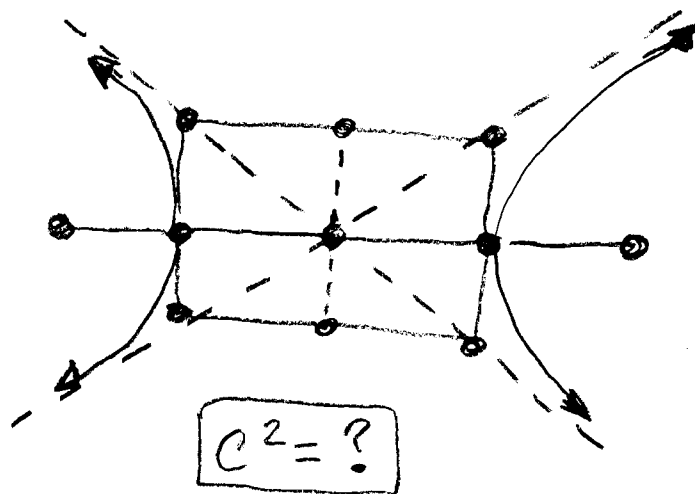


PRECALC BE - TUESDAY 3-16-10

① LABEL THE parts and/or formulas for the hyperbola below:



$$C(h, k)$$

$$V(h \pm a, k)$$

$$F(h \pm c, k)$$

$$y - k = \frac{b}{a}(x - h)$$

$$y - k = -\frac{b}{a}(x - h)$$

transverse axis

conjugate axis

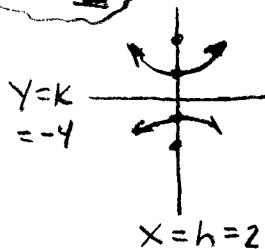
asymptotes

Dimensions ?
?

EX 2 Pg 645 Find COORDINATES: center, foci, vertices,
Find EOL for Asymptotes. Graph.

Look
y is FIRST
↓

$$\frac{(y+4)^2}{36} - \frac{(x-2)^2}{25} = 1$$



$$a^2 = 36 \therefore a = 6 \quad b^2 = 25 \therefore b = 5$$

$$c^2 = a^2 + b^2 = 36 + 25 = 61 \quad c = \sqrt{61}$$

$$C(2, -4)$$

x, y

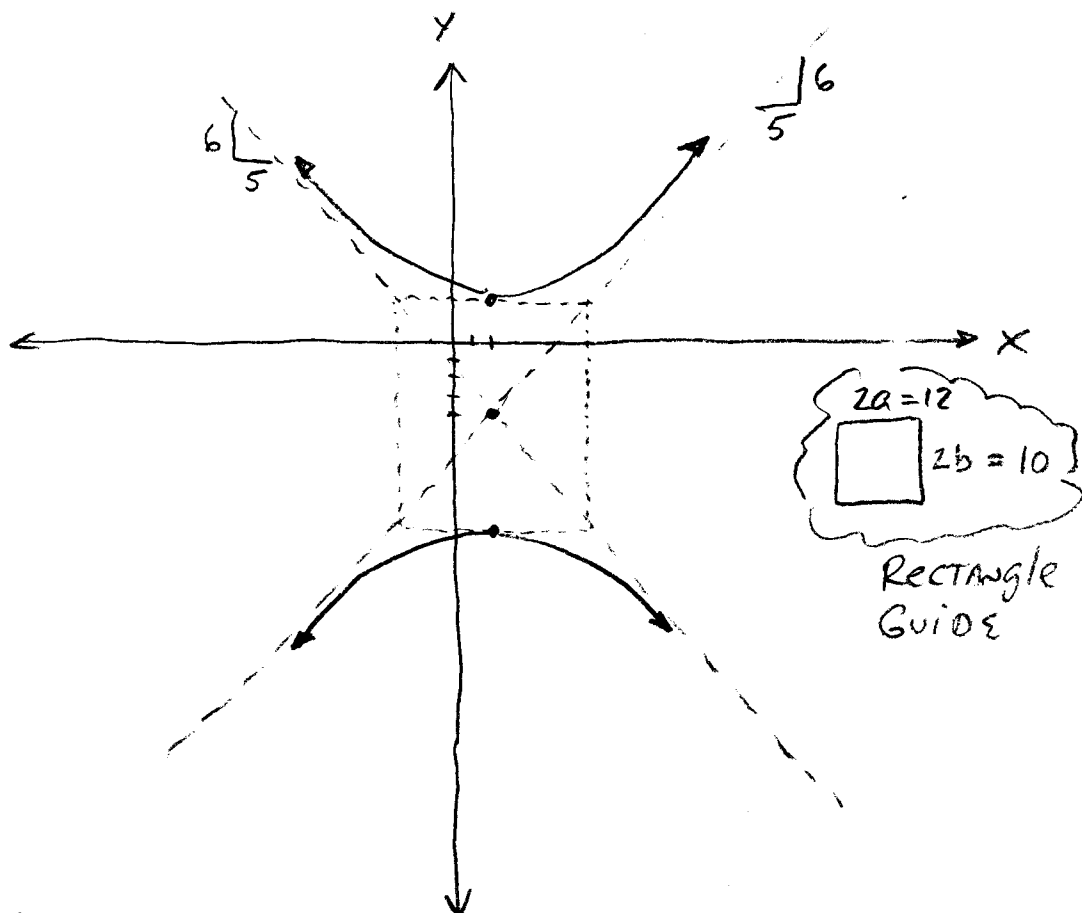
$$\text{Foci} \Rightarrow (h, k \pm c) = (2, -4 \pm \sqrt{61})$$

$$V(h, k \pm a) = (2, -4 \pm 6) = (2, 2), (2, -10) = V$$



$$\text{Asymptotes} \Rightarrow y - k = \pm \frac{a}{b}(x - h)$$

$$y + 4 = \pm \frac{6}{5}(x - 2)$$



Ex 3
pg 646

Graph $9x^2 - 4y^2 - 54x - 40y - 55 = 0$

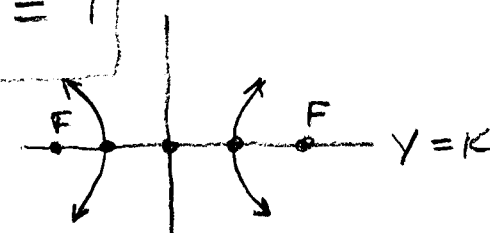
$$9x^2 - 54x - 4y^2 - 40y = 55$$

$$9(x^2 - 6x + 3^2) + -4(y^2 + 10y + 5^2) = 55 + 81 + (-100)$$

CAREFUL!

$$\frac{9(x-3)^2}{36} + \frac{-4(y+5)^2}{36} = \frac{36}{36}$$

$$\frac{(x-3)^2}{4} - \frac{(y+5)^2}{9} = 1$$

First term $\Rightarrow x \Rightarrow$ 

$$a^2 = 4, a = 2 \quad b^2 = 9, b = 3 \quad x = h$$

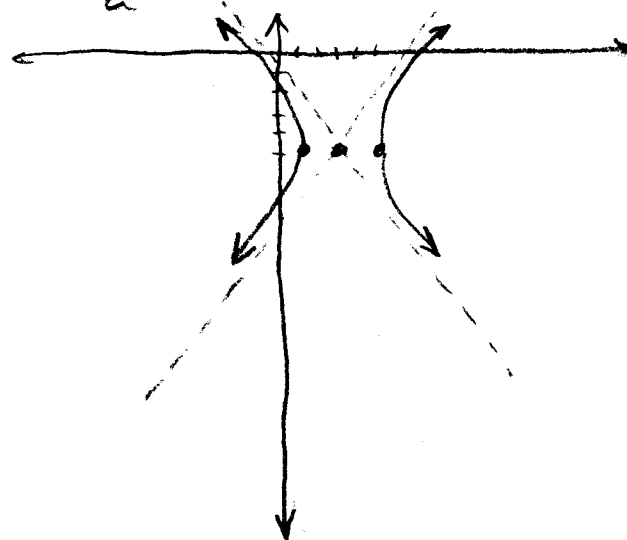
$$c^2 = a^2 + b^2 = 4 + 9 \therefore c = \sqrt{13}$$

$$C(3, -5) \quad F(h \pm c, k) = (3 \pm \sqrt{13}, -5) = F$$

$(h, k) \quad V(h \pm a, k) = (3 \pm 2, -5)$

$$V = (5, -5), (1, -5)$$

Asymptotes $\Rightarrow y - k = \pm \frac{b}{a}(x - h) \Rightarrow y + 5 = \pm \frac{3}{2}(x - 3)$



Homework: Pg. 649 # 5, 6, 7

$$\textcircled{5} \quad \frac{x^2}{25} - \frac{y^2}{4} = 1$$

$$\textcircled{6} \quad \frac{(y-3)^2}{16} - \frac{(x-2)^2}{4} = 1$$

$$\textcircled{7} \quad y^2 - 5x^2 + 20x = 50$$
